Radiological evaluation of OrthAlign -a novel handheld navigation system used in total knee replacement

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Aims and Objectives: To determine the accuracy of cuts made with OrthAlign -a novel handheld navigation system used in total knee replacement. The OrthAlign – a hand held accelerometer based system will be compared with the traditional extra medullary jigs. To compare the accuracy of two methods used to make the distal femoral and proximal tibial cuts in total knee arthroplasty.

Methods: This is a prospective cohort study. The study arm consisted of patients for whom the OrthAlign hand held navigations system was used for proximal tibial and distal femoral resection. Controls included patients who had TKA using the traditional extra medullary alignment jigs during the same period. The alignment of the patient's knee joints were analysed by comparing preoperative and postoperative full length standing stitch view radiograph of bilateral lower limbs.

Results and Conclusions: The overall post op mechanical alignment was better in the orthalign group as compared to the mechanical alignment group although the difference was not significant .There was a **significant i**mprovement in the tibial component alignment in the coronal plane in the Orthoalign group as compared to the mechanical alignment group. There was a **significant** improvement in the mean tibial component alignment in the saggital plane with the Orthalign cohort compared to conventional cohort. The post-operative femoral alignment was better in the mechanical alignment group as compared to the Orthalign group – but the difference was not significant.

The number of outliers who had a post op mechanical axis alignment >3 degrees; and the outliers who had tibial alignment in coronal plane >2 degrees were more in those who had conventional alignment methods- though the difference was not statistically significant.

The number of outliers who had a post op tibial alignment in sagittal plane >2 degrees were **significantly** more in those who had conventional alignment methods than those who used Orthalign

The number of outliers who had a post op femoral alignment in coronal plane >2 degrees were more in those who used the Orthalign method- though the difference was not statistically significant.

The **tourniquet time** was significantly less in the Orthoalign group as compared to the mechanical alignment group.

Key words: Total knee arthroplasty, Orthalign, Hand held navigation, mechanical axis